AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended). A ~~vaccine~~ composition comprising an immunogenic amount of ~~a first~~ an immunoglobulin molecule ~~sufficient to induce an anti-idiotype response, said first immunoglobulin molecule~~ comprising a variable region ~~and being identical, except for one or more amino acid substitutions in said variable region, to a second immunoglobulin molecule, said second immunoglobulin molecule~~ having (a) at least one complementarity determining region (CDR) ~~that has a~~ comprising an antigenic portion of ~~an antigen of~~ a ~~cell or~~ protein involved in reproductive function, and (b) at least one ~~said one or more amino acid substitutions being the~~ substitution ~~of~~ with ~~one or more~~ an amino acid ~~residues~~ residue that ~~do~~ does not have a sulfhydryl group at ~~one or more positions~~ a position corresponding to ~~one or more~~ a cysteine ~~residues~~ residue that ~~form~~ forms a disulfide bond ~~in said second immunoglobulin molecule~~; and a pharmaceutically acceptable carrier.

2. (withdrawn). The vaccine composition according to claim 1, wherein said antigen is a sperm antigen.

3. (withdrawn). The vaccine composition according to claim 2, wherein said sperm antigen is SP-10, MSA-63 or LDH-C4.

4. (currently amended). The ~~vaccine~~ composition according to claim 1, wherein said ~~antigen~~ protein is selected from the group consisting of gonadotropin-releasing hormone, a gonadotropin, prostaglandin F2 alpha, oxytocin, gonadotropin receptors, SP-17, PH-20, FA-1, FA-2, PH-30, RSA, HAS-63, ZP1, ZP2, an d ZP3.

5. (currently amended). The ~~vaccine~~ composition according to claim 1, wherein at least two CDRs contain an antigenic ~~a first CDR contains a~~ portion of ~~an antigen of~~ a ~~cell or~~ protein associated with reproductive function ~~and a second CDR contains a portion of an antigen of a cell or protein associated with reproductive function~~.

6. (withdrawn). The vaccine composition according to claim 5, wherein said first CDR contains a portion of SP-10 antigen, and said second CDR contains a portion of LDH-C4.

7. (currently amended). The ~~vaccine~~ composition according to claim 1, wherein said variable region is a light chain variable region and said ~~amino acid residue that does not have~~

~~sulfhydryl group~~ substitution is at a position corresponding to position 23 or 88 in ~~said~~ a human light chain variable region ~~of said second immunoglobulin molecule~~.

8. (currently amended). The ~~vaccine~~ composition according to claim 1, wherein said variable region is a heavy chain variable region and said ~~amino acid residue that does not have a sulfhydryl group~~ substitution is at a position corresponding to position 22 or 92 in ~~said~~ a human heavy chain variable region ~~of said second immunoglobulin molecule~~.

9. (currently amended). The ~~vaccine~~ composition according to claim 1, 7 or 8, wherein said amino acid residue is alanine.

10. (currently amended). The ~~vaccine~~ composition according to claim 1, in which said first immunoglobulin molecule is of a type selected from the group consisting of IgG, IgE, IgM, IgD and IgA.

11. (currently amended). A ~~vaccine~~ composition comprising an immunogenic amount of a fragment of ~~a first~~ an immunoglobulin molecule ~~sufficient to induce an anti-idiotype response~~, said ~~first immunoglobulin molecule~~ fragment comprising a variable region ~~and being identical, except for one or more amino acid substitutions in said variable region, to a second immunoglobulin molecule, said second immunoglobulin molecule~~ having (a) at least one ~~complementarity determining region (CDR) that has a~~ comprising an antigenic portion of ~~an antigen of~~ a ~~cell or~~ protein involved in reproductive function, and (b) at least one ~~said one or more amino acid substitutions being the~~ substitution ~~of~~ with ~~one or more~~ an amino acid ~~residues~~ residue that ~~do~~ does not have a sulfhydryl group at ~~one or more positions~~ a position corresponding to ~~one or more~~ a cysteine ~~residues~~ residue that ~~form~~ forms a disulfide bond ~~in said second immunoglobulin molecule~~; and a pharmaceutically acceptable carrier.

12. (withdrawn). The vaccine composition according to claim 11, wherein said antigen is a sperm antigen.

13. (withdrawn). The vaccine composition according to claim 12, wherein said sperm antigen is SP-10, MSA-63 or LDH-C4.

14. (currently amended). The ~~vaccine~~ composition according to claim 11, wherein said ~~antigen~~ protein is selected from the group consisting of gonadotropin-releasing hormone, a gonadotropin, prostaglandin F2 alpha, oxytocin, gonadotropin receptors, SP-17, PH-20, FA-1, FA-2, PH-30, RSA, HAS-63, ZP1, ZP2, and ZP3.

15. (currently amended). The ~~vaccine~~ composition according to claim 11, wherein at least two CDRs contain an antigenic ~~a first CDR contains a~~ portion of ~~an antigen of~~ a ~~cell or~~ protein associated with reproductive function ~~and a second CDR contains a portion of an antigen of a cell or protein associated with reproductive function~~.

16. (withdrawn). The vaccine composition according to claim 15, wherein said first CDR contains a portion of SP-10 antigen, and said second CDR contains a portion of LDH-C4.

17. (currently amended). The ~~vaccine~~ composition according to claim 11, wherein said variable region is a light chain variable region and said ~~amino acid residue that does not have sulfhydryl group~~ substitution is at a position corresponding to position 23 or 88 in ~~said~~ a human light chain variable region ~~of said second immunoglobulin molecule~~.

18. (currently amended). The ~~vaccine~~ composition according to claim 11, wherein said variable region is a heavy chain variable region and said ~~amino acid residue that does not have a sulfhydryl group~~ substitution is at a position corresponding to position 22 or 92 in ~~said~~ a human heavy chain variable region ~~of said second immunoglobulin molecule~~.

19. (currently amended). The ~~vaccine~~ composition according to claim 11, 17 or 18, wherein said amino acid residue is alanine.

20. (currently amended). The ~~vaccine~~ composition according to claim 11, in which said first immunoglobulin molecule is of a type selected from the group consisting of IgG, IgE, IgM, IgD and IgA.

21. (currently amended). A method of contraception in a subject, said method comprising administering to said subject an immunogenic amount of ~~a first~~ an immunoglobulin molecule ~~sufficient to induce an anti-idiotype response, said first immunoglobulin molecule~~ comprising a variable region ~~and being identical, except for one or more amino acid substitutions in said variable region, to a second immunoglobulin molecule, said second immunoglobulin molecule~~ having (a) at least one ~~complementarity determining region (CDR) that has a~~ comprising an antigenic portion of ~~an antigen of~~ a ~~cell or~~ protein involved in reproductive function, and (b) at least one ~~said one or more amino acid substitutions being the~~ substitution ~~of~~ with ~~one or more~~ an amino acid ~~residues~~ residue that ~~do~~ does not have a sulfhydryl group at ~~one or more positions~~ a position corresponding to ~~one or more~~ a cysteine ~~residues~~ residue that ~~form~~ forms a disulfide bond ~~in said second immunoglobulin molecule~~.

22. (currently amended). The method according to claim 21 which further comprises isolating an antibody from said subject, said antibody recognizing the idiotype of said ~~second~~ immunoglobulin molecule and administering said antibody to a second subject.

23. (withdrawn). The method according to claim 21, wherein said antigen is a sperm antigen.

24. (withdrawn). The method according to claim 23, wherein said sperm antigen is SP-10, MSA-63 or LDH-C4.

25. (currently amended). The method according to claim 21, wherein said ~~antigen~~ protein is selected from the group consisting of gonadotropin-releasing hormone, a gonadotropin, prostaglandin F2 alpha, oxytocin, gonadotropin receptors, SP-17, PH-20, FA-1, FA-2, PH-30, RSA, HAS-63, ZP1, ZP2, and ZP3.

26. (currently amended). The method according to claim 21, wherein at least two CDRs contain an antigenic ~~a first CDR contains a~~ portion of ~~an antigen of~~ a ~~cell or~~ protein associated with reproductive function~~ and a second CDR contains a portion of an antigen of a cell or protein associated with reproductive function~~.

27. (withdrawn). The method according to claim 26, wherein said first CDR contains a portion of SP-10 antigen, and said second CDR contains a portion of LDH-C4.

28. (currently amended). The method according to claim 21, wherein said variable region is a light chain variable region and said ~~amino acid residue that does not have sulfhydryl group~~ substitution is at a position corresponding to position 23 or 88 in ~~said~~ a human light chain variable region ~~of said second immunoglobulin molecule~~.

29. (currently amended). The method according to claim 21, wherein said variable region is a heavy chain variable region and said ~~amino acid residue that does not have a sulfhydryl group~~ substitution is at a position corresponding to position 22 or 92 in ~~said~~ a human heavy chain variable region ~~of said second immunoglobulin molecule~~.

30. (original). The method according to claim 21, 28 or 29, wherein said amino acid residue is alanine.

31. (original). The method according to claim 21, in which said first immunoglobulin molecule is of a type selected from the group consisting of IgG, IgE, IgM, IgD and IgA.

CONCLUSION

Applicants submit that the above revised amendments to the claims complies with 37 C.F.R. § 1.121 and respectfully request that it be entered in the file of the captioned application

Applicants do not believe any fee is due. However, the Commissioner is authorized to charge any required fee to Jones Day Deposit Account No. 50-3013. A duplicate of this sheet is enclosed for accounting purposes.

Respectfully submitted,

Date: September 30, 2004

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